

## OPINION 81

THE GENOTYPE OF CIMEX, ACANTHIA, CLINOCORIS, AND  
KLINOPHILOS

SUMMARY.—On basis of the premises before the Commission, the common bedbug of Europe, *Cimex lectularius*, is the genotype for *Cimex* 1758, *Acanthia* 1775, *Clinocoris* 1829, and *Klinophilos* 1899 (*Clinophilus* 1903), and its proper technical designation under the Rules is *Cimex lectularius*. *Cimex* Linn., 1758, type *C. lectularius* is hereby placed in the Official List of generic names.

PRESENTATION OF CASE.—Dr. W. Dwight Pierce has submitted the following case for opinion. (Additions by the Secretary are marked \*):

The scientific name of the bedbug has proved one of the most confusing problems in entomological nomenclature. It appears to the writer that the proper name should be *Clinocoris lectularius* Linnaeus, as accepted by Girault, Kirkaldy, and Reuter, and used in some medical text books (Castellani and Chalmers).

In American literature it also passes under the generic names *Cimex* and *Acanthia*.

In 1758 Linnaeus (*Syst. Nat.*, 10th edit., p. 441) described *Cimex* with 85 species, of which *lectularius* was first and *stockerus* second. The genus was described as having four wings, but *lectularius* is wingless and does not agree with the generic description. No type is designated by Linnaeus.

Dr. C. W. Stiles in 1907 (*Proc. Ent. Soc. Wash.*, vol. 8, p. 67, 68) considers that *lectularius* must be considered type because of Linnaeus' rule to select the commonest and most medicinal species as type of his genera. Such a method of selection, it seems to me, would be valid if there were no definite designations of type preceding Dr. Stiles' paper. The evidence presented below is against the acceptance of Dr. Stiles' designation.

In 1775, Fabricius (*Syst. Ent.* p. 696) discusses *Cimex*, and includes 167 species with "*stockerus*" Linnaeus as the first species, and he describes (p. 693) *Acanthia* with 15 species, of which (*Cimex*) *lectularius* Linnaeus (= *Acanthia lectularia*) is first. This action by Fabricius definitely removes *lectularius* from *Cimex*. (\*No type was designated.—C. W. S.)

In 1789, Oliver (*Encycl. Meth.*, vol. 4, *Intr.*, p. 25) reversed Fabricius' division of genera, and called *Acanthia* Fabricius "*Cimex*" (Punaise), and called *Cimex* Fabricius "*Pentatoma*." From this date begins the confusion.

In 1797, Latreille ((\*1796a,) *Précis des Caractères*, p. 85) in discussing *Acanthia* says, "Je ne rapporte à ce genre que les espèces de Fab. que l'on trouve ordinairement aux bords des eaux. Les autres appartiennent aux Genres Coré et Lygé." (\*Latreille (1796a, 83) cites "*Cimex* Linn. . . . Punaise . . . s. *Pentatoma*, Oliv." No type is selected, no species mentioned.—C. W. S.)

Kirkaldy in 1899 (*The Entomologist*, vol. 32, p. 219) considers Latreille's remarks to definitely limit the genus *Acanthia* to *littoralis* and its allies. Accepting this interpretation of Latreille's action, we must concede that *lectularia* was definitely eliminated from *Acanthia* in 1797.

(\* Cuvier, 1798a, 574-575 (Tableau élémentaire de l'histoire naturelle des animaux) says:

Les punaises (*Cimex*)

On les divise en

a. Acanthies . . . (Mentions only "*C. lectularius*.")

b. Punaises proprement dites. (*Cimex* Fabr.) (4 sp., *lineatus*, *haemorrhoidalis*, *olcraceus*, *ornatus*.)

c. Corées. (*Corcus* Fabr.). (Mentions only *marginatus*.)

d. Lygées. (*Lygaeus* Fabr.). (2 sp.)

e. Gerres. (*Gerris* Fabr.)

f. Hydrometre. (*Hydrométra* Latr.) (Mentions only *stagnorum*.)

g. Reduves. (*Reduzius*.) (Mentions only *personatus*.)

(\* The question arises whether the expression, "Punaises proprement dites (*Cimex* Fabr.)," when 4 species are cited, constitutes a restriction that affects the type designation. The Secretary is inclined to the view that even if this point were conceded, the type is not designated thereby either for *Acanthia* or for *Cimex*, and that while it might have been better under the circumstances to follow this division subsequent to 1798, we cannot alter the fact that this course was not uniformly followed. We must take the facts as they exist, not as they should or might have been.)

For the next few years we find the species in ever shifting positions, none of which can really be accepted if we view elimination as a legitimate process in limiting a generic concept.

Schellenburg in 1800 (*Cimicum Helvetiae Genus*, pp. 5, 6, 15, 16) in a monograph of the Cimicidae has both genera *Cimex* and *Acanthia*, and places *lectularia* in *Acanthia* (\* but does not designate types).

(\* Lamarck, 1801a (Syst. anim. sans vertèbres, pp. 293-294) adopts *Cimex* Linn. as genus, which he divides as follows:

"Corps ovale ou arrondi. (*Acanth.* Fab.)

"*Cimex lectularius*. Lin. *Acanthia lectu*—(p. 294) *laria*. Fab. Ent. 4, p. 67. Geoff. ins. 1, p. 434, n. 1. La punaise des lits.

"Cet insecte incommode et puant, n'a ni ailes ni élytres par un avortement qui se perpétue, et propage dans un état qui ressemble à celui de larve. Néanmoins sa classe et son genre sont déterminés par la considération de ses congénères.

"Corps oblong, un peu étroit. (*Ligaei*, Fab.)

"*Cimex equestris*. Lin. *Ligaeus equestris*. Fab. ent. 4, p. 147. *Climex*. Geoff. ins. 1, p. 442, no. 14.")

(\* On page viii, Lamarck says: "Pour faire connoître d'une manière certaine les genres dont je donne ici les caractères, j'ai cité sous chacun d'eux une espèce connue, ou très rarement plusieurs, et j'y ai joint quelques synonymes que je puis certifier; cela suffit pour me faire entendre.")

(\* Thus while Lamarck clearly intended *C. lectularius* to be considered as a *Cimex*, he recognized two subgroups (*Acanthia* and *Lygaeus*), placing *C. lectularius* in the subgroup *Acanthia*. If his remarks on page viii (see above) are to be interpreted as definite designation of genotypes for the genera in which only one species is cited, it would appear that *lectularius* is here designated type of *Acanthia*. Since, however, he did not name one of his subgroups as *Cimex* s. str., it would appear that either *Acanthia* or *Lygaeus* should be interpreted as the typical subgroup, hence as *Cimex* s. str., hence also that

either *lectularius* or *equestris* should be type of *Cimex*. As this point is not definite from the context, it must be concluded that "rigidly construed" (Art. 30g), Lamarck did not here designate type for *Cimex*.)

(\*Linnaeus (1802, Turton Ed., Syst. Nat., pp. 608-702) divides *Cimex* into six groups (cf. subgenera) as follows: 1. *Cimex* (*Acanthia*) which includes *lectularius*, *littoralis* and many other species; 2. *Cimex* (*Cimex*) which includes *bidens* and many other species; and four other groups which do not influence the present problem, namely, 3. *Cimex* (*Lygacus*); 4. *Cimex* (*Geris*); 5. *Cimex* (*Miris*); and 6. *Cimex* (*Reduvius*). Types are not cited for these groups, but it is to be noticed that both *lectularius* and *littoralis* are placed in *Acanthia*, and it is clear that a typical subgenus *Cimex* has been created, but as no type is designated this seems to leave the subject in the same status as did "Punaises proprement dites. (*Cimex* Fabr.)" of Cuvier, 1798a. So far as *Acanthia* is concerned, the status of affairs has reverted to that which existed in 1775.)

Fabricius in 1803 (Syst. Rhyng., p. 112-113, 155-179) treats both *Acanthia* and *Cimex* and limits *Acanthia* to *lectularia* and *hemiptera*. Kirkaldy (1899, The Entomologist, vol. 32, p. 220) is very positive in asserting that Fabricius in this work designates *bidens* L. as type of *Cimex*. It is true that *bidens* is the first Linnaean species included in the Fabrician concept of *Cimex*, but I cannot find a positive designation.<sup>1</sup>

Latreille in 1804 (Hist. Nat. Crust. et Ins. p. 237, 240-244, 254-255) definitely states<sup>2</sup> on p. 237 that he reversed the Fabrician decisions and makes *lectularius* type of "punaise," which is his common name for *Cimex*, and on page 254-255 limits *Cimex* to *lectularius*. He places in *Acanthia*, *zosterac*, *littoralis* and four other species.

(\*Dumeril, 1806, 264 (Zool. analytique) appears definitely to designate *lectularius* as type (by monotypy) of *Cimex*. The passage in question reads: "2. Les punaises (*cimex*, Linne; *acanthia* Fab.) ont le corps ovale, très applati, cinq articles aux antennes, et le corcelet en croissant recevant la tête. On n'en a encore observé qu'une seule espèce, qui attaque pendant la nuit l'homme et certains oiseaux, en particulier les hirondelles.)

(\*Dumeril (1806, 262) adopts *Acanthia* for species, not mentioned by name, which live on banks of bodies of water, on bark of trees, and on fruits.)

(\*Latreille, 1807 (Gen. Crust. et insect), p. 136 mentions only *C. lectularius* under *Cimex*, and cites (p. 142) *A. maculata*, *Lygacus saltatorius*, *Salda littoralis*, *S. zosterac*, and *S. striata*, under *Acanthia*.)

Latreille in 1810a (Consid. Gen., p. 433) in the list which is considered as designating types by an Opinion (\* No. 11) of the International Commission, designates *lectularia* as type of *Acanthia*, thus contradicting his positive state-

<sup>1</sup> (\*Fabricius, 1803, 112, cites *lectularia* (chef de file) and *hemiptera* as belonging to *Acanthia*, and p. 155-170 he cites 123 species (without type designation (See Art. 30r) for *Cimex*); (*bidens* is chef de file).—C. W. S.)

<sup>2</sup> P. 237: "Il nous a paru plus convenable de restituer à cet insecte le nom sous lequel il est généralement connu, et de le faire servir de type au genre punaise (\* *Cimex*, p. 254), dont il est jusqu'à présent la seule espèce bien connue."

ments of 1797, 1804, and even on previous pages in the same book. He refers *Cimex* to *Pentatoma*.<sup>1</sup>

(\* On p. 434 he cites "*Lygaeus saltatorius*" as type of "*Acanthia*" (*Acanthia*).)

(\* Lamarck 1816b, 501-503, clearly designates *lectularius* as type for *Cimex*, for though he cites two species (*lectularius* and *hirundinis*) the second (*hirundinis*) is not an original (1758) species, and he says "Par les nombreuses distinctions établies, le genre: punaise (*Cimex*) se trouve presque (cf. *hirundinis*) réduit à la seule espèce (*lectularius*) qu'on eut souhaite ne jamais connaitre." Under *Acanthia* he includes *maculata*, *littoralis*, and *zosterac*, but without type designation.)

Fallen in 1818 (*Cinices Sveciae*, p. 17, 27) has 18 species in *Cimex* and limits *Acanthia* to *lectularia*. (\* Not a type designation—C. W.S.)

In 1825 Saint Fageau and Serville (*Encycl. Meth.*, vol. 10, p. 250-251) follow Olivier in placing *lectularius* as the only (\* positive) species in *Cimex*.

Fallen in 1829 (*Hem. Svec.*, p. 140, 142) limits *Acanthia* to *lectularia* but suggests *Clinocoris*<sup>2</sup> as a better generic name. This is the first time that *lectularia* has had a bona-fide location since 1797. (\* Fallen includes *bidens* and 17 other species in *Cimex*.—C. W.S.)

(\* The publication by Fallen, 1829, brings up a very complicated combination of nomenclatorial possibilities.)

(\* (a). It is clear that *Clinocoris* (ἡ κλίνηα couch; ὁ κόρις, a bug) 1829 is *Acanthia* (ἀκανθίας, a prickly thing) renamed, hence (Art. 30f, rule) "the type of either, when established, becomes ipso facto type of the other.")

(\* (b). The first definite type designation for *Acanthia* was *Lygaeus saltatorius* (by Latreille, 1810a, 434), but as this was not an original species for *Acanthia* it is not available as type.)

1904: *A. lectularia* is apparently accepted as type by Kirkaldy, 1904, *Nature*, 465; 1905; and by Reuter, 1908, *Ent. mon. Mag.* 27.

1912: *Cimex lectularius* is definitely designated as type by Castellani & Chalmers, 1913, 637 and 1920, 763.

1917: *C. lectularius* is definitely accepted as type by Van Duzee, 1917, 285.

(\* The only species (See dissenting view by Stejneger in Discussion) which can possibly come into theoretical consideration as genotype both of *Acanthia* and of *Clinocoris* are: *A. lectularia* and *A. clavicornis*; all theoretical arguments are in favor of accepting *lectularia* which is the only one of the two species which has ever been definitely cited by name in connection with *Clinocoris* and which is the first and only species ever designated as type of *Clinocoris*. Accordingly, unless it can be shown that *clavicornis* has been designated type of *Acanthia*, *lectularia* remains type of *Clinocoris* and therefore type of *Acanthia* also.)

<sup>1</sup> (\* Latreille, 1810a, p. 257 says: "G. 324, Punaise, *Cimex*." and on p. 433 he says: "Punaise, *Acanthia lectularia*." Thus *lectularius* is designated type of *Cimex*.)

<sup>2</sup> *Acanthia* renamed. "Nomen generis ab ακανθία (*spina*) desumsit Cel. Fabricius, verisimiliter propter punctionem insecti. Forsitan convenientius judicabitur nomen *Clinocoris* (Germanice Bettwanze). 1. *A. lectularia*."

(\*Curtis, 1835 (Brit. Ent. vol. 12, pl. 548, 569) says: 548: "*Acanthia* . . . Type of the Genus, *Cimex littoralis* Linn." and 569: "*Cimex* . . . Type of the Genus, *Cimex lectularius* Linn.")

(\*Westwood, 1840, vol. 2, Synopsis, p. 110, designates *saltatoria* Linn. as type of *Acanthia* . . . , and p. 120 *C. lectularius* as type of *Cimex*; but *saltatoria* is not cited as an original species by Fabricius in 1775.)

In 1843 Amyot & Serville (Hist. Nat. Ins. Hemiptères, p. 310-313) give a good discussion of the case in hand, stating that Fabricius by dividing *Cimex* into three genera definitely removed *lectularius* to *Acanthia*. They attribute all our present difficulties to Olivier's (1789) arbitrary reversal of the Fabrician genera calling *Acanthia* Fabr. "*Cimex*," and *Cimex* L., Fabr. "*Pentatoma*." They further recite Latreille's reversals of opinion in 1797 and later, first accepting *Acanthia* for *lectularia* and later *Cimex*. They treat *Acanthia* with only *lectularia*.

(\*Reuter (Wien. Ent. Zeitung, 1882, 301-306) discusses the case in detail and accepts *lectularius* as type of *Cimex*; on basis of Fabricius (1803) he accepts *littoralis* as type of *Acanthia*. He argues that Fabricius (1803) definitely designated types by his method of comparison (chef de file).)

In 1899, Kirkaldy (The Entomologist, p. 219) overlooking *Clinocoris*, and considering the bedbug without a generic name, proposed *Klinophilos* (\*tod. *Cimex lectularius*, and he took *bidens* Linn., as type of *Cimex*.—C. W. S.).

(\*Blanford (1903, Nature, 200) changes *Klinophilos* to *Clinophilus* and adopts *lectularius* as type of *Cimex* on basis of the Linnaean rules. Kirkaldy (1904, Nature, 465), replying to Blanford, claims that (on basis of elimination) *lectularius* is excluded from being taken as type of *Cimex* and that Latreille (1797) restricted *Acanthia* to "*littoralis* and its congeners"; Kirkaldy accepts *Clinocoris*, instead of his *Klinophilos*, for the bedbug. Blanford (1904, Nature, 464), replies that the generic name was taken from a species in the Linnaean genus that was called *Cimex* in classical Latin. The only species that can be clearly identified with the Latin name appears to be *C. lectularius* L. and he accepts this as type of *Cimex* on basis of the Linnaean rules.)

In 1905, Kirkaldy (The Entomologist, vol. 38, p. 76, 78) withdrew *Klinophilos*, accepting *Clinocoris*, and gave further proof on pp. 304-306.

In 1908, Reuter (Ent. mon. Mag., vol. 44, p. 27) reviewed the situation and agreed<sup>1</sup> with Kirkaldy (1899) that *littoralis* should be type of *Acanthia*, *bidens* type of *Cimex*, and *lectularius* of *Clinocoris*.

Kirkaldy, 1909 (Cat. Hemiptera (Heteroptera) vol. 1, p. xxvi-xxviii), again insists that Fabricius 1803 named *bidens* as type of *Cimex*, but says that Latreille 1804 named (*zosterac* Latr.) = *saltatorius* L. as the type of *Acanthia*.

(\*Apstein, 1915a, 158, (Nomina Conservanda) designates *lectularius* as type of *Cimex*.)

(\*Van Duzee (1917, Catalog. Hemipt., 285) accepts *lectularius* as type of *Cimex* on basis of Lamarck (1801a, 293), Latreille (1810a, 257, 433), Laport (1832, 51) and Westwood (1840), all of whom he quotes as "names *lectularius* type." He also accepts *lectularia* as type of *Acanthia* on basis of Fabr. (1803,

<sup>1</sup> Reuter quotes (in part erroneously) Kirkaldy, 1899, p. 219, as follows: "I therefore see no alternative to adopting the name *Acanthia* for *littoralis* (\* & c." in original of K. but omitted by R.—C. W. S.) as Kirkaldy has already done in his monograph of the palaearctic species."

112). The Secretary does not accept Laport (1832, 51) and Fabr. (1803, 112) as definite type designation.)

As I see the synonymy at present, it may be summarized as follows:

1. *Cimex* Linnaeus 1758, type *bidens* L. selected according to Kirkaldy by Fabricius 1803, but at least by Kirkaldy 1899. The genus is limited by removal of *Acanthia* Fabricius 1775 thus taking away *lectularius*. Accepted as above by Reuter 1908.

2. *Acanthia* Fabricius 1775, type *littoralis* L. selected by Latreille 1804 according to Reuter 1908. The genus was limited to exclude *lectularia* by Latreille 1797.

3. *Clinocoris* Fallen 1829—monotype *lectularia* L. The genus is offered as substitute for *Acanthia* Fabricius 1803, Fallen 1829 (not Fabricius 1775, Latreille 1797). Accepted by Kirkaldy 1899, 1905, 1909; Reuter 1908; Girault, 1905.

#### SYNONYMS:

(a) *Acanthia* Schellenberg, 1800; Fabricius, 1803, type by elimination *lectularius*; Latreille, type by designation, 1810; Fallen monotype, 1818; Fallen monotype, 1829; Douglass and Scott 1865.

(b) *Cimex* Latreille, 1804, type by designation *lectularius*; Stiles, 1907 (designation); E. Saunders, 1892; Lethierry & Severin, 1896.

(c) *Klinophilos* Kirkaldy, 1899, type by original designation *lectularius*.

DISCUSSION.—The case submitted is one more to be added to the many cases of generic confusion due to the fact that so many authors have been content with division of genera, but have ignored the principle of genotype fixation. If authors had followed the Linnæan code in this case, and had, in accordance with said code,<sup>1</sup> adopted *C. lectularius* as type of *Cimex* the confusion would have been automatically avoided.

The premises have been set forth by Dr. Pierce in the "Presentation of Case." In company with Dr. Pierce the Secretary has verified the references, but his interpretation of certain of the citations differs somewhat from that presented by Dr. Pierce. This case of nomenclatures has been discussed in more or less detail by a considerable number of authors and their views seem to be hopelessly at variance. No opinion the Commission adopts can count upon universal approval since so many complications, giving rise to different views, come into consideration. One principle develops in the case (see *Clinocoris*) which has never been before the Commission heretofore, which seems to be an entirely new principle, and yet one which seems to be clearly covered by the rules.

In addition to the literature cited by Dr. Pierce, the Secretary has consulted a number of other references which are briefly summarized

<sup>1</sup> The particular Linnæan rule in question reads "Si genus receptum, secundum jus naturæ et artis, in plura dirimi debet, tum nomen antea commune manebit vulgatissimæ et officinali plantæ."

or cited herewith. As the Secretary sees the points at issue, they involve four generic names (*Cimex*, *Acanthia*, *Clinocoris*, and *Klinophilos*) and may be summarized as follows:

1. *Cimex* Linn., 1758a: Two species (*lectularius* and *bidens*) have been selected as type.

A. In the original publication the type is not determined under Art. 30—

(a) Original designation, (b) Use of *typicus* or *typus*, (c) Monotypy, or (d) Absolute tautonymy.

B. Neither species thus far designated as type (*lectularius* and *bidens*) is excluded under Art. 30(e).

C. No complication arises under Art. 30(f), renaming of genus.

D. In case of doubt, Recommendations (h to t), the following points are to be held in mind under Art. 30:

1758: *C. lectularius* (*Cimex* of Pliny) is on the preferred list under (h) the Linnaean rule, (n) best described, best figured, best known, and easily obtained species, (p) parasitic on man, (q) probably actually studied by author, (t) page precedence.

1775: *C. lectularius* would not be on the preferred list because (k) elimination by: Fabricius, 1775, 693; 1787, 280; 1794, 67; 1803, 112.—Cuvier, 1798.—Schellenberg, 1800, 15.—Turton, 1802.—Fallen, 1818, 19; 1829.—Burmeister, 1837a, 596.—Amyot & Serville, 1843.—Douglass & Scott, 1868, 278.—Claus, 1885a.—Leunis, 1886a.—R. Blanchard, 1890a, 473.—Railliet, 1895a, 820.—Kirkaldy, 1899; 1904, 465; 1905.—Reuter, 1908, 27.—And many others.

*A. bidens* seems to be on the preferred list under (k) because it remained in *Cimex* after *A. lectularia* was eliminated (1775) and (o) De Candolle's rule.

Apparently neither *A. lectularia* nor *A. bidens* has preference, one over the other, under (i) Virtual tautonymy, (j) non-exotic, (r) sexually mature vs. larvae, (m) name *communis*, etc., (s) Linnaeus did not declare in favor of the first species rule.

1803: *C. bidens* is on the preferred list under (r) as chef de file by Fabricius, 1803, 155.

E. "Rigidly construed" (Art. 30g) the following references are to be interpreted as citation of illustrative or characteristic species rather than as selection of type, or at best are debatable.

1764: *C. lectularius* by: Brunnich, 1764, 82 (see also p. 56).—Olivier, 1789, 25.—Lamarck, 1801a, 293.—Latreille, 1804, 254; 1807, 136.—St. Fagean & Serville, 1825.—DeLaporte, 1832, 51.—Stal, 1873, 104.—And many others.

1834: *C. juniperinus* by: Burmeister, 1837a, 597.

F. "Rigidly construed" (Art. 30g) the following references are undebatably definite designations of genotypes:

1804: *C. lectularius* by: Latreille, 1804, 254; 1810a, 257, 433.—Dumeril, 1806, 264.—Lamarck, 1816b, 502.—Curtis, 1835, 569.—Westwood, 1840, 120.—Pascoe, 1868, 94.—Reuter, 1882, 301.—Blanford, 1903, 200; 1904, 464.—Stiles, 1907, 67.—Apstein, 1915a, 158.—Van Duzee, 1917, 285.

1899: *C. bidens* by: Kirkaldy, 1899, 220; 1909, xxviii (on basis of Fabr. 1803), 4.—Reuter 1908.

G. CONCLUSION.—*C. lectularius* was the first original species definitely designated (1804) as type of *Cimex* in harmony with Art. 30 and this designation is not subject to change.

2. *Acanthia* Fabr. 1775: Four species (*A. saltatoria*, *A. littoralis*, *A. zosterac*, and *A. lectularia*) have been selected as type.

A. In the original publication, the type is not determined under Art. 30 (a, b, c, d).

B. Under Art. 30 (e, a), *A. saltatoria* is definitely excluded as type since it was not an original species. *A. zosterac* is not cited as an original species, and it was further considered later to be a synonym of *saltatoria*; accordingly, *A. zosterac* is definitely excluded as type.

C. A distinct complication arises because of the renaming of genus. *Acanthia* was renamed *Clinocoris* in 1829, hence under Art. 30(f) the type of either, when established, becomes, ipso facto, type of the other. As a natural result, no species which is excluded as type of one of these genera can come into consideration as type of the other, and as *A. littoralis* was definitely excluded from *Clinocoris* by the founder of the generic name, this species cannot (under Art. 30e, a) become type of *Clinocoris*, hence (Art. 30f),



dating with 1829 it is definitely excluded from consideration in selecting (Art. 30g) the type of *Acanthia*.

D. In case of doubt, the following points are to be held in mind:

1775: *A. lectularia* is on the preferred list under (h) the Linnean rule, (n) best known, etc., (p) parasitic on man, (q) probably actually studied by author, and (t) page precedence.

1789: *A. lectularia* would not be on the preferred list because of (k) elimination by: Olivier, 1789, 25.—Dumeril, 1806, 262.—Latreille, 1804; 1807; 1810a.—Lamarck, 1816b, 502.—St. Fagean & Serville, 1825.—DeLaporte, 1832, 51.—Curtis, 1835.—Westwood, 1840.—Stal, 1873, 104.—Reuter, 1882, 301; 1908, 27.—Kirkaldy, 1899; 1904; 1905.—Blanford, 1903; 1904.—Stiles, 1907.—Apstein, 1917a.—Van Duzee, 1917.—And many others.

1803: *A. littoralis* would not be on the preferred list because of (k) elimination by: Fabricius, 1803, 115, to *Salda*.—Fallen, 1829, 71.

*A. littoralis* seems to be on the preferred list under (o) DeCandolle's rule.

Apparently neither *A. lectularia* nor *A. littoralis* is on the preferred list under (i) Virtual tautonymy, (l) Sexually mature *v.s.* larvae, (m) name *communis*, etc., (s) Fabricius did not declare in favor of the first species rule.

1803: *A. lectularia* is on the preferred list under (r) as chef de file by Fabricius, 1803, 112.

E. "Rigidly construed" (Art. 30g) the following references, are to be interpreted as citation of illustrative or characteristic species rather than selection of type, or at best are debatable.

1796: *A. littoralis* group by: Latreille, 1796a, 185; 1804, 240.—Dumeril, 1806.—Lamarck, 1816b, 508.—Kirkaldy, 1904, 465.

1798: *A. lectularia* by: Cuvier, 1798a, 574.—Schellenberg, 1800, 15.—Lamarck, 1801a, 293.—Fallen, 1818, 17, 27; ? 1829, 140.—Burmeister, 1837a, 596.—Amyot & Serville, 1843, 310.—Douglass & Scott, 1868, 278.—Claus, 1885a.—Leunis, 1886a.—Knauer, 1887a,

339.—R. Blanchard, 1890a, 473.—Railliet, 1895a, 820.—And many others.

1832: *A. saltatoria* by: DeLaporte, 1832, 52.

F. "Rigidly construed" (Art. 30g) the following references are undebatably definite designations of genotypes.

1810: *A. saltatoria* by: Latreille, 1810a, 259, 434.—Westwood, 1840, 119.—Kirkaldy, 1909, xxviii (on basis of Latreille, 1804).

1835: *A. littoralis* by: Curtis, 1835, 548.—Reuter, 1882, 301 (on basis of Fabr. 1803); 1908, 26-27 (on basis of Kirkaldy, 1899, 218).

1868: *A. zosteræ* by: Pascoe, 1868, 94-95 (on basis of Latr. 1802; 1804).—Kirkaldy, 1909, xxviii (so. *saltatorius*) (on basis of Latreille, 1804) (chef de file of *Salda* by Fabr., 1803, 113).

1917: *A. lectularia* by: Van Duzee, 1917, 285 (on basis of Fabr., 1803, 112).

G. CONCLUSION: *A. lectularia* is type because it is the first and only original species (Art. 30e, a) of both *Acanthia* and *Clinocoris* which has been validly designated as type either of *Acanthia* or of *Clinocoris* (see C).

3. *Clinocoris* (Petersson ? in) Fallen, 1829, *Acanthia* Fabricius renamed hence both must have the same genotype. *C. lectularius* is the only species which has been definitely designated as type.

A. On basis of the original publication it is possibly a debatable point but very doubtful whether the type is determined under (a) original designation, but it is not determined under (b, c, or d).

B. *C. lectularius* is available under Art. 30 (e).

C. Complications arise under Art. 30 (f) as *Clinocoris* is *Acanthia* renamed. The following 7 of the 15 original species of *Acanthia* are definitely excluded (under 30 e, a) from consideration as type of *Clinocoris*, since Fallen (1829) himself definitely excluded them by not including them in *Clinocoris* and by classifying them elsewhere: *A. betulæ* (in *Aradus*), *A. cardui* (in *Tingis*), *A. corticalis* (in *Aradus*), *A. laevis* (in *Aradus*), *A. littoralis* (in *Salda*), *A. pyri* (in *Tingis*), *A. rugosa* (in *Aradus*).

C'. Commissioner Stejneger holds another view as follows: The fact brought out by Dr. Stiles in the rewritten Opinion, that Fallen, in 1829, simultaneously with suggesting *Clinocoris* as a substitute for *Acanthia*, placed *A. littoralis*

of Fabricius in another genus, *Salda*, can have no influence on Curtis's right, in 1835, to designate it as type of *Acanthia* Fabricius.

As shown above, *Acanthia*, up to the year 1829, had not any valid type designation, and was consequently still polytypic. Fallen in this year did not alter the status of *Acanthia*; he only mentioned *lectularia* as one of the species, but gave a substitute name, *Clinocoris*. Consequently, *Clinocoris* at that date was equally polytypic, and must share the fate of *Acanthia*. It now appears that on the same occasion he also relegated *Acanthia littoralis* to another genus, *Salda*. The question then arises: Does this action of Fallen in placing *A. littoralis* in another genus nullify Curtis' explicit designation, in 1835, of *littoralis* as the type of *Acanthia*? Is there anything in Code Art. 30 which makes this action of Curtis invalid? These questions, it seems to me, have already been answered in Opinion 62 which specifically provides that Article 30 does not even exclude type species of other genera from consideration in the subsequent selection of the type of a given genus. The fact that Fallen removed *littoralis* to another genus, *Salda*, consequently does not bar its designation by Curtis in 1835, since even if he had made it the type of *Salda* (and so he may have done for all I know) that fact would not have invalidated the designation of *littoralis* as type of *Acanthia*. Fallen, in 1829, did not make a new genus *Clinocoris*, he only suggested a new name for an old genus, and this substitute name must ipso facto have the same designated type. If *littoralis* is the type of *Salda*, *Salda* also becomes a synonym of *Acanthia*.

D. In case of doubt, the following points are to be held in mind under Recommendations (h to t) of Art. 30:

1829: *C. lectularius* is on the preferred list under (h, n, p, q, and t).

1829: *C. lectularius* (known as κόρις by Aristophanes; κόρις ἀπὸ κλίνης by Discorides), is to be selected ("unless such preference is strongly contraindicated by other factors") under (i) Virtual tautonymy: ἡ κλίνη, a couch; *lectulus*, a little bed; ὁ κόρις, a bug.

? 1829: *Acanthia lectularia* by Monotypy, by Fallen, 1829, 141. This is open to debate. Certain it is that this is the species which Fallen had especially in mind. A difference of opinion seems, however, inevitable, as

theoretical arguments exist on both sides. Hence, rigidly construed, this designation or alleged designation might perhaps best be tabled.

1829: *C. lectularius* is on the preferred list under (j) as a non-exotic species, when compared with the following 6 of the 8 remaining original species (not mentioned above in C) of *Acanthia*; *A. crassipes* (Dresden); *A. lunata* (India); *A. rhombea* (Africa); *A. serrata* (hab. unknown); *A. serratulae* (England); *A. umbraculata* (Hafniae).

1829: *Acanthia clavicornis*, the one remaining original species of *Acanthia* which comes into theoretical competition has nothing (under Art. 30) to give it preference over *A. lectularia*.

E. "Rigidly construed" (Art. 30g), it is not clear that Girault (1905, 61, 117) designates the genotype.

F. "Rigidly construed" (Art. 30g), the following references are undebatably definite designations of genotype.

1904: *C. lectularius* by: Kirkaldy, 1904, 465; 1905.—Reuter, 1908, 27.—Castellani & Chalmers, 1913, 637; 1920, 763.—Van Duzee, 1917, 285.

G. CONCLUSION.—*C. lectularius* was the first and only original species of *Clinocoris* definitely designated as type of *Clinocoris* in harmony with Art. 30 and this designation is not subject to change.

4. *Klinophilos* Kirkaldy, 1899=*Clinophilus* Blanford, 1903. 1899: *lectularius* type by monotypy (Art. 30c).

As soon as one departs from the foregoing citations to which the Rules can be strictly applied one encounters citations that are subject to interpretations that are diametrically opposed to each other and one becomes involved in the uncertainties of elimination, retransfer, and reeliminations, and in the vagaries involved in the citation of a single species as example.

Accordingly, the Secretary recommends that the Commission adopt as its Opinion the following:

1. On basis of the premises before the Commission, the common bed-bug of Europe, *Cimex lectularius* Linn., 1758, is genotype for *Cimex* Linn., 1758, *Acanthia* Fabr., 1775, *Clinocoris* Petersson or Fallen, 1829, and *Klinophilos* Kirkaldy, 1899 (= *Clinophilus* Blanford, 1903), and its proper designation under the rules is *Cimex lectularius*.

2. *Cimex* Linn., 1758, type *C. lectularius*, is hereby placed in the Official List of generic names.

Commissioner Stejneger presents the following dissenting conclusion which is presented for vote as alternative Opinion:

I am therefore constrained to maintain that my original conclusions were correct as formulated in my first vote to the effect:

(1) That *lectularius* Linn., 1758, is the type of *Cimex*; (2) that *Klinophilus* of Kirkaldy, 1899, is a synonym of *Cimex* with the same type; (3) that *Acanthia* of Fabricius, 1775, has for type *Cimex littoralis*; (4) that *Clinocoris* of Fallen, 1829, is a synonym of *Acanthia* with the same type.

Opinion<sup>1</sup> written by Stiles.

Opinion as written by Stiles concurred in by ten Commissioners: Allen, Handlirsch, Hartert, Horvath, Hoyle, Jordan (D. S.), Kolbe, Monticelli, Skinner, Stiles.

Opinion as modified by Stejneger (but accepting *lectularius* as type of *Cimex*) concurred in by one (or two?) Commissioners: Stejneger, ?Bather.

Opinion dissented from by one Commissioner: Jordan (K.).

Not voting on opinion as now written (see, however, footnote, p. 31) five Commissioners: Apstein (accepts *lectularius* as type of *Cimex*), R. Blanchard (deceased; prior to death he accepted *lectularius* as type of *Cimex*) Dautzenberg (accepts *lectularius* as type of *Cimex*), Roule, Simon.

The essential point is that 14 Commissioners have concurred in accepting *lectularius* as type of *Cimex* as against one Commissioner who dissents from this view.

Bather adds: "I do not accept Stiles' argument, p. 26, C. I am doubtful as to the validity of all of Stejneger's remarks, p. 28, C'. I incline to think that this is a case in which one should frankly give up argument and decide either on ground of practical convenience or by drawing lots. From first to last an amount of time must have been wasted on this bed-bug enough to decide the fate of six alleged murderers. Is it worth while?"

Handlirsch adds: "Wenn *Cimex* in dem Sinne '*lectularius*' beibehalten wird und *Salda* für *littoralis* etc., so fällt endlich der Name

<sup>1</sup>The Opinion as written in Circular Letter No. 36 was:

Concurred in by 14 Commissioners: Allen, Apstein, Bather, Blanchard, Dautzenberg, Handlirsch, Hartert, Horvath (part), Hoyle, Jordan (D.S.), Monticelli, Skinner, Stejneger (part), Stiles.

Dissented from (in part) by 2 Commissioners: Horvath, Stejneger. Not voting, 4 Commissioners: Jordan (K), Kolbe, Roule, Simon.

*Acanthia*, der so viel Confusion verursacht hat, und alle Zweifel sind endgültig beseitigt. Das its ja schliesslich doch die Hauptsache."

Hoyle adds: "On reading this re-statement of the case, the following points occur to me: (1) That the action of Linné in placing '*lectularius*' as first species in '*Cimex*,' taken in conjunction with his method of selecting types is almost sufficient to make '*lectularius*' the type of '*Cimex*,' though perhaps it does not justify the phrase 'rigidly construed.' (2) However this may be, it seems to me that Latreille (1804) definitely makes '*lectularius*' the type of '*Cimex*' and this action overrules any preceding subdivisions and eliminations. I, therefore, see no reason to reverse my previous opinion."

Jordan (D. S.) adds: "I should have taken Stejneger's view, but not insistently as the case is excessively complex."

Jordan (K.) adds: "I. As a matter of principle the original diagnosis of a genus should be considered first guide in determining the type species of the genus. If the original author, by the wording of his diagnosis, indicates from which kind of species the diagnosis is taken, this indication has priority over all subsequent ones. *E. g.*, Hübner describes his genus *Heraclia* (Lepid.) as having 'glossy green black' forerings, and places into this genus three species, of which two agree with the description, while the third does not. Obviously, the type of the genus is one of the 'glossy green black' species. Similarly, *Cimex* is diagnosed by Linnaeus as having four wings; his conception of a true *Cimex*, therefore, was a four-winged insect. The bed-bug does not conform with this conception. Therefore, I cannot accept *lectularius* as type of *Cimex*. But something might be said in favor of discarding priority (or suspending the rules) in this important case."

"II. *Acanthia* Fabr., 1775, was based on a number of species inclusive of the bed-bug. The diagnosis of the genus seems to cover all species, being very general (and faulty). In 1794 Fabricius gave a fuller diagnosis of *Acanthia*, stating 'elytris coriaceis, planis, apice membranaceis longitudine abdominis. . .', but he, nevertheless, leaves *lectularius* in this *Acanthia*. Latreille in 1797 limits *Acanthia* to the species found near water. Both Fabricius in 1794 and Latreille in 1797 place the bed-bug outside the concept of true *Acanthia*, and I submit that from 1794 *lectularius* had no valid generic name.

"III. In 1803 Fabricius reversed his conception of 1794 and restricted *Acanthia* to the bed-bugs. He was not entitled to do so. This concept of 1803 and not the *Acanthia* Fabr., 1775, was renamed *Climocoris* by Fallen in 1829. I consider *Climocoris* to be the first valid generic term for *lectularius*."